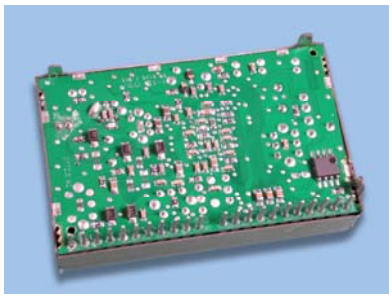
MICROTUNE®

RF SILICON AND SUBSYSTEMS SOLUTIONS
FOR BROADBAND COMMUNICATIONS AND AUTOMOTIVE ELECTRONICS

MT1384WFC AM/FM TUNER MODULES

PRODUCT BRIEF

The MT1384WFC is a high-end AM/FM tuner module with integrated dynamic selectivity which supports worldwide AM and FM bands.



MT1384WFC AM/FM Tuner Module

The MT1384WFC AM/FM Tuner Modules are high-end products specifically designed to meet the demanding performance, market, and pricing targets of automotive customers. The MT1384WFC AM/FM Tuners combine the low system integration effort of a standard “plug and play” module with outstanding features and absolute high-end performance.

These tuner modules offer world standard functionality by supporting the various frequency allocations in the US, Europe, and Asia (including Japan). The MT1384WFC Tuner Modules are available with either horizontal-mount mechanics or vertical-mount mechanics. Special custom-designed versions are available on request.

The AM section of the tuner module contains an up/down conversion system with an active prestage and an audio output. Features such as excellent sensitivity and very good large signal performance, together with the functionality of the implemented noise blanker, help ensure that the tuner module produces clear AM reception - even in critical situations.

The FM section of the module contains a double down-conversion system with a selective prefilter circuit and MPX signal, as well as an RDS-MPX signal output. Using appropriate external signal processing, the stereo signal and the RDS/RBDS data can be derived from these outputs. The dynamic selectivity function continuously evaluates the current receiving situation and the current modulation, and controls the optimum IF bandwidth automatically. The dynamic threshold extension automatically improves the S/N ratio at low RF input levels. Using these features, the MT1384WFC Tuner Modules produce audible signals where standard tuners produce only noise and interference.

APPLICATIONS

- High-end car radios
- High-end home radios

FEATURES

AM

- Up/down conversion
- Excellent sensitivity
- Superior selectivity due to highly sophisticated filter technology
- Noise blanker at second IF
- High AGC dynamic range
- AM stereo output available
- AGC-threshold programmable

FM

- Double down-conversion
- Selective prefilter circuit
- Image reject mixers
- Keyed AGC selectable, AGC-threshold programmable
- Dynamic threshold extension
- Fixed and variable IF filters with hardware “closed-loop” control
- Supports inaudible RDS updating
- 10.7 MHz IF output supports external antenna diversity systems
- Weather band

GENERAL

- World-standard AM/FM function
- Serial data bus-controlled
- Very fast PLL
- On-board EEPROM supports digital alignment for AM and FM
- IF counter information readable
- Programmable switching output
- Reference frequency output supports appropriate external signal processor (see the MT1384WFC Application Kit)
- Horizontal or vertical housing available
- Lead free and RoHS compliant

MICROTUNE

OPERATING CHARACTERISTICS

Parameter	Min	Typ	Max	Unit
5V Power supply voltage				
Current AM mode		42		mA
Current FM mode		32		mA
Voltage	4.75	5	5.25	V
8.5V Power supply voltage				
Current AM mode		62		mA
Current FM mode		62		mA
Voltage	8	8.5	9	V
Operating temperature				
Parametric temperature range	-40		+85	°C
Storage temperature	-40		+95	°C

INPUT/OUTPUT CHARACTERISTICS

Parameter	Min	Typ	Max	Unit
AF Hold (maximum sink current)	1.0	1.2	1.4	mA
AF Sample (maximum sink current)	1.0	1.2	1.4	mA
AM AF output				
AM mono load impedance	100			kΩ
AM mono output resistance			500	Ω
Antenna input impedance				
AM input capacitance		60		pF
AM input conductance		2		µS
FM input (50Ω system)			4	VSWR
Field strength (level) output				
Voltage	0		7	V
FM MPX output				
Bandwidth	200			kHz
Load resistance	20			kΩ
Output resistance			500	Ω
IF bandwidth flag output	Internal use only (alignment and test mode)			
RDS MPX output				
Bandwidth		300		kHz
Load resistance	20			kΩ
Output resistance			500	Ω
Software flag output				
Open collector with 10 kΩ pull-up resistance	0.1		5	V
SCL and SDA	High and Low levels are according to the IIC bus specification. Thresholds of either 3.3V or 5V are tolerated.			
Reference frequency output				
Frequency		75.368		kHz
AC voltage (peak to peak)		90		mV
DC voltage		3.4		V
IF output resistance		50		Ω

TUNER VERSIONS

Tuner ID	Tuner Type	Housing Version	FM Band			AM Band		
			A	U/E	WX	LW	MW	SW
3x0194L	MT1384WFC	vertical	x	x	x	x	x	x
3x0195L	MT1384WFC	horizontal	x	x	x	x	x	x

FM Band: A=Asia (including Japan); U/E=USA/Europe; WX=weatherband
AM Band: LW=longwave; MW=midwave; SW=shortwave

x = function; – = no function

AM ELECTRICAL CHARACTERISTICS

Parameter	Min	Typ	Max	Unit
Receiving frequency range				
AM Mode USA	520		1720	kHz
AM Mode Europe	144		6290	kHz
AM Mode Japan	520		6295	kHz
Sensitivity for S/N = 10 dB		4.0		µV
S + N/N at high RF input		50		dB
Audio output voltage		300		mV
THD + N				
Normal condition		49		dB SINAD
Overload condition		40		dB SINAD
Image rejection		80		dB
IF rejection		80		dB
Selectivity		10		kHz
In-band mixing		68		dBµV
Wideband AGC		94		dBµV
Field strength output (RFin = 60 dBµV)		2.7		V

FM ELECTRICAL CHARACTERISTICS

Parameter	Min	Typ	Max	Unit
Receiving frequency range				
FM Mode USA	87.9		107.9	MHz
FM Mode Europe	87.5		108	MHz
FM Mode Japan	76		90	MHz
Sensitivity for S/N = 30 dB		1.6		µV
S + N/N (deviation = 60 kHz)		72		dB
THD + N				
Normal condition		61		dB SINAD
Low input level (RFin = 4 µV)		40		dB SINAD
Image rejection		60		dB
FM MPX output voltage (deviation = 50 kHz)		400		mV
Channel selectivity (200 kHz)		66		dB
Channel selectivity (400 kHz)		73		dB
Three-signal intermodulation		62		dB
AM suppression		55		dB
Field strength output (RFin = 60 dBµV)		2.8		V
IF output level (RFin = 60 dBµV)		75		dBµV
FM Weather Band (WX) USA	162.4		162.55	MHz
Sensitivity WX for S/N = 10 dB		7		µV
S+N/N (deviation = 1.5 kHz)		32		dB
THD+N (deviation = 1.5 kHz)		30		dB SINAD
MPX output voltage (deviation = 2.5 kHz)		315		mV

MECHANICAL CHARACTERISTICS

Parameter	Measurement	Unit
Vertical Housing		
Length	64.8	mm
Width	16.0	mm
Height	42.0	mm
Horizontal Housing		
Length	62.4	mm
Width	38.9	mm
Height	15.6	mm

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